Afsaneh Taheri Kal Koshvandi

Founder of Lucidix | Inventor of Light-Free Proximity Labeling
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| https://scholar.google.com/citations?user=j7ldfL0AAAAJ&hl=fa

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Professional Summary

Multidisciplinary chemist and founder of **Lucidix**, a programmable theranostic platform integrating **bioluminescent proximity labeling** with **AI-driven diagnostic circuits**. Inventor of **18 patent families** covering light-free proteomic tools, cancer vaccines, and autonomous therapeutic systems. Published in Nature-tier journals and preprints (2025). Expertise spans **protein engineering, chemical proteomics, and translational bridges** from molecular tools to clinical applications in oncology and reproductive health.

Technical Skills

Molecular & Protein Engineering

- Bioluminescent Proximity Labeling (LucID™, Split-LucID™, NanoCage-ID™)
- Probe Design | Bioconjugation | Click Chemistry | Biosensors

Proteomics & Analytical Tools

- Mass Spectrometry (LC-MS/MS, 2D-Electrophoresis)
- Protein Interaction Mapping | Bioinformatics (STRING, KEGG, MaxQuant)

Cellular & Translational Tools

- Cell Culture | Cancer Biomarker Discovery | Theranostic Circuit Design

Instrumentation

- NMR, FT-IR, HPLC, UV-Vis, XRD, ICP-OES

Founding Experience

Founder & Principal Investigator – Lucidix Inc. (2022–Present)

- Led the development of a **light-free bioluminescent labeling platform** from concept to patent stage
- Filed **18 US patent families** across proteomics, oncology, fertility, and synthetic biology
- Published **3 preprints** documenting Lucidix platform and BRET-based logic gates
- Designed **licensing and translational pathways** for clinical deployment
- Built IP architecture and modular commercialization strategy

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Research Experience

Postdoctoral Researcher – Iran University of Science & Technology / INSF (2018–2022)

- Developed photoaffinity and proximity labeling tools for proteome-wide interaction studies
- Designed photoreactive probes and workflows for LC-MS/MS analysis
- Investigated cancer proteome modulation via nanocomposites and curcumin

Ph.D. Researcher – Alzahra University, Tehran

- Synthesized multifunctional nanocomposites and MOFs for catalytic and biomedical applications
- Conducted multi-step organic synthesis, heterocycle formation, and bio-conjugation

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Education

- **Ph.D. in Chemistry** – Alzahra University, Tehran
- **M.Sc. in Organic Chemistry** – Razi University, Kermanshah
- **B.Sc. in Chemistry** – Razi University, Kermanshah

Selected Patents (Lucidix Inc.)

Title	Function	Status
LucID-Core™	Light-free biotinylation	US #63/819,895
Split-LucID™	Interaction-specific labeling	Filed
LuxArna™	Autonomous cancer vaccine	US #63/845,352
NanoCage-ID™	Tumor-targeted uncaging	US #63/843,608
LucID-Trace™	Genetic memory encoding	US #63/845,129
BioFirewall™	Cellular defense circuits	US #63/844,555

Full patent list (18 families) available upon request.

Selected Publications

1. LucID: A Self-Activating Bioluminescent Biotin Ligase – *bioRxiv, 2025*
2. Quintuple BRET Platform for Light-Free Proximity Proteomics – *ChemRxiv, 2025*
3. Lucidix Platform™M: Logic-Gated Biotherapeutic Computers – *Zenodo, 2025. https://doi.org/10.5281/zenodo.16384405.*
4. Recent Advances in Optical Biosensors for Cancer Biomarkers – *TrAC, 2020*
5. Original Development and Prior Disclosure of a Bioluminescence-Activated Proximity Labeling Platform Using Luciferase–Photosensitizer Conjugates (Documenting Scientific Priority and IP Ownership by Dr. Afsaneh Taheri Kal-Koshvandi).*Zenodo, 2025.* https://doi.org/10.5281/zenodo.15554676.

Full list: Google Scholar

Professional Activities

- Reviewer & Section Editor: Springer, Elsevier journals
- Scientific Committee Member: Graphene 2D Materials, UK
- Teaching Assistant: Organic Chemistry – Payame Noor University

Languages

- English (C2 – Proficient)
- Persian (Native)

Research Interests

Chemical Proteomics | Proximity Labeling | Cancer Diagnostics | Synthetic Biology
Bioluminescent Biosensors | AI-Driven Biocircuits | Fertility & Neurobiology